

U.S. Application No. 10/608,335
Response to Office Action dated January 17, 2008

Attorney Docket: 500.42880X00

REMARKS

The present Amendment amends claims 1 and 13, leaves claims 7, 9-12, 14, and 15 unchanged, and adds new claims 16 and 17. Therefore, the present application has pending claims 1, 3, 7 and 9-17.

Preliminary Matters

As a preliminary matter, although the Examiner indicates that claims 1, 3, 7 and 9-14 are rejected as being unpatentable over Atsushi in view of Zaltman, the Examiner has failed to provide any reasons for rejecting any of claims 3, 7 and 9-14 as being unpatentable over Atsushi in view of Zaltman (see paragraph 5 on pages 3-4 of the Office Action). Accordingly, Applicants respectfully request the Examiner to provide specific reasons for rejecting the claims, or to withdraw the rejection.

In addition, although the Examiner indicates that claims 13-15 are rejected as being unpatentable over Atsushi in view of Ho, and further in view of Freer, the Examiner has failed to provide any reasons for rejecting claim 15 as being unpatentable over Atsushi, in view of Ho, and further in view of Freer (see paragraph on pages 7-9 of the Office Action). Furthermore, although reasons are provided for rejecting claim 14, the Examiner's rejection is clearly erroneous because claim 14 depends on claim 1, and claim 1 is only rejected as being unpatentable over Atsushi in view of Zaltman – not over Atsushi in view of Ho. Accordingly, Applicants respectfully request the Examiner to provide specific reasons for rejecting the claims and to clarify the rejection of claim 14, or to withdraw the rejection.

Furthermore, although the Examiner indicates that claim 15 is rejected as being unpatentable over Atsushi in view of Ho, and further in view of Freer, and

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even further in view of Shpiro, the Examiner's rejection is clearly erroneous because claim 15 depends on claim 1, and claim 1 is only rejected as being unpatentable over Atsushi in view of Zaltman – not over Atsushi in view of Ho and Freer. Accordingly, Applicants respectfully request the Examiner to clarify the rejection of claim 15, or to withdraw the rejection.

For the above-described reasons, the Examiner is kindly reminded of the proper format for an obviousness rejection, which is provided in MPEP 706.02(j). As described in MPEP 706.02(j), The Examiner should set forth in the Office Action:

- (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,
- (B) the difference or differences in the claim over the applied reference(s),
- (C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and
- (D) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

As further described in MPEP 706.02(j), it is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply. Furthermore, if an initially rejected application issues as a patent, the rationale behind an earlier rejection may be important in interpreting the scope of the patent claims. Since issued patents are presumed valid (35 U.S.C. 282) and constitute a property right (35 U.S.C. 261), the written record must be clear as to the basis for the grant. Since

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patent examiners cannot normally be compelled to testify in legal proceedings regarding their mental processes (see MPEP § 1701.01), it is important that the written record clearly explain the rationale for decisions made during prosecution of the application.

In view of the above discussion, Applicants respectfully request that the Examiner more clearly describe the relevant teachings of the prior art relied upon, the differences in the claims over the applied references, the proposed modifications to cited art necessary to arrive at the claimed subject matter, and an explanation as to why one of ordinary skill in the art at the time the invention was made would be motivated to modify relied-upon art with other relied-upon teachings.

Furthermore, in the rejection of claims 3, 7 and 9-12, the Examiner makes reference to Publication Number 09-149894 (*English Computer Translation from the Patent of Abstracts of Japan*) to Fumio. However, for accuracy of the record, it appears that the Examiner intended to make reference to Publication Number 05-046066 to Fumio.

35 U.S.C. §112 Rejections

Claims 3, 7 and 9-12 stand rejected under 35 U.S.C. §112, first paragraph as allegedly failing to comply with the enablement requirement. This rejection is traversed for the following reasons. The Examiner's rejection is unclear. It is unclear as to whether the Examiner is alleging that the disclosure does not support using: an analyzed rate of change in hemoglobin concentration at a corresponding time; the attention information; or both the analyzed rate of change of hemoglobin concentration at a corresponding time and the attention information. Nonetheless,

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Applicants submit that the features of claim 3 are supported by the disclosure.

For example, the Examiner's attention is directed to page 21, lines 12-16, which provides where when the degree of concentration is low, the period of time when a low degree of concentration was measured and the contents learning position corresponding to the period of time may also be displayed. Furthermore, the Examiner's attention is directed to page 18, line 26 to page 20, lines 17, which discusses the attention information analysis module and the concentration judgment module. Even further, the Examiner's attention is directed, generally to page 17, line 13 to page 20, line 17. The cited text and the accompanying drawings fully support the claimed features.

Accordingly, Applicants submit that claims 3, 7 and 9-12, as now more clearly recited, are in compliance with the provisions of 35 U.S.C. §112.

35 U.S.C. §103 Rejections

I. The Combination of Atsushi and Zaltman Does Not Teach or Suggest the Features of Claim 1 (and Claims 3, 7 and 9-14, which were not discussed by the Examiner)

Claims 1, 3, 7 and 9-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Publication No. 09-149894: *English Computer Translation from the Patent Abstracts of Japan* to Atsushi in view of U.S. Patent No. 6,315,569 to Zaltman. This rejection is traversed for the following reasons.

As previously discussed, the Examiner failed to provide reasons for rejecting claims 3, 7 and 9-14. Accordingly, Applicants have not been properly apprised as to why claims 3, 7 and 9-14 are rejected. Accordingly, Applicants response to the

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present rejection is limited to claim 1 – that is, the only claim for which the Examiner has provided reasons for rejecting.

Applicants submit that the features of the present invention, as now more clearly recited in claim 1, are not taught or suggested by Atsushi or Zaltman, whether taken individually or in combination with each other in the manner suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe features of the present invention. Specifically, amendments were made to the claims to more clearly recite that the present invention is directed to a learning condition judging program as recited, for example, in independent claim 1.

The present invention, as recited in claim 1, and as similarly recited in claim 1, provides a learning condition judging program embodied on a computer readable medium, where the program is executable in an information processing apparatus, and where the program is operable on the information processing apparatus to perform a series of steps. The information processing apparatus starts a learning program in the information processing apparatus, where the information processing apparatus is connected through an information acquiring means to a near infrared measuring device, and is connected to a recording means, an input means and a display means. The information processing apparatus also displays learning contents within a predetermined window on the display means. The information processing apparatus further continuously acquires, as the learning program progresses, measurement information of a blood flow rate in a brain of a user of the

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information processing apparatus, where the measurement information is obtained from the near infrared measuring device through the information acquiring means. Also, the information processing apparatus acquires input information and operation information given by the user to the information processing apparatus through the input means, where the input information and the operation information indicate progress of the learning program. Further, the information processing apparatus acquires audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the information processing apparatus. Furthermore, the information processing apparatus analyzes a rate of change in hemoglobin concentration from the blood flow rate. Further, the information processing apparatus judges, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the learning program is higher than a predetermined degree by using the measurement information of the blood flow rate and the attention information to determine that the user is in concentration time. Even further, the information processing apparatus records the degree of concentration of the user and the attention information of the user with the progress of the learning program in the recording means. The prior art does not teach or suggest all of these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record.

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Specifically, the features are not taught or suggested by either Atsushi or Zaltman, whether taken individually or in combination with each other.

Atsushi teaches a living body input device and living body controller using an optical living body measurement method. However, there is no teaching or suggestion in Atsushi of the learning condition judging program executable in an information processing apparatus, as recited in claim 1 of the present invention.

Atsushi discloses a device and method for measuring localized brain functions to control a computer, a game, an environment controller, a learning level judgment device, a vehicle alarm, medical diagnostic and alarm devices, a lie detector, an intention display device, and an information transmitter, etc. The device includes an optical brain function measurement device, which is attached to a user by use of optical fibers for irradiation and convergence. The head part transmission light intensity of respective measurement areas measured by the optical brain function measurement device is input to an arithmetic unit. The arithmetic unit uses the head part transmission light intensity of the respective measurement areas and the absorption coefficient of oxidized and reduced hemoglobin stored in a storage device to determine output signals. The output signals are input to an external device, which performs an operation corresponding to the type of signal input to the external device.

One feature of the present invention, as recited in claim 1, includes acquiring input information and operation information given by the user to the information processing apparatus through the input means, where the input information and the operation information indicate progress of the learning program. Atsushi does not

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disclose this feature.

To support the assertion that Atsushi teaches this feature, the Examiner makes reference to where the optical brain function measurement device 17 is input to an arithmetic unit 21, and the Field of the Invention. However, neither the cited text nor drawings teach or suggest the claimed feature. For example, Atsushi does not teach where the input and the operation information indicate progress of the learning program. As described in paragraph [0006] of Atsushi, the oxyhemoglobin concentration change and reduction hemoglobin concentration change are measured independently. This information does not indicate the progress of the learning program, as in the present invention.

Another feature of the present invention, as recited in claim 1, includes acquiring audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the information processing apparatus. Atsushi does not disclose this feature, and the Examiner does not rely upon Atsushi for teaching this feature.

Yet another feature of the present invention, as recited in claim 1, includes analyzing a rate of change in hemoglobin concentration from the blood flow rate. Atsushi does not disclose this feature.

As described in paragraph [0006] of Atsushi, the oxyhemoglobin concentration and reduction hemoglobin concentration are measured by the difference in a color by the absorption of light. This is not the same as analyzing a rate of change in hemoglobin concentration from the blood flow rate, as in the

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present invention.

Still yet another feature of the present invention, as recited in claim 1, includes judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the learning program is higher than a predetermined degree by using the measurement information of the blood flow rate and the attention information to determine that the user is in concentration time. Atsushi does not disclose this feature, and the Examiner does not rely upon Atsushi for teaching a step of judging a degree of concentration.

Yet even still another feature of the present invention, as recited in claim 1, includes recording the degree of concentration of the user and the attention information of the user with the progress of the learning program in the recording means. Atsushi does not disclose this feature. More specifically, Atsushi does not teach or suggest recording the degree of concentration of the user and the attention information of the user with the progress of the learning program in the recording means, as in the present invention.

Therefore, Atsushi fails to teach or suggest "acquiring input information and operation information given by said user to said information processing apparatus through said input means, wherein the input information and the operation information indicate progress of said learning program" as recited in claim 1.

Furthermore, Atsushi fails to teach or suggest "acquiring audio or video information of said user of said information processing apparatus so as to obtain

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attention information of said user through at least one of a microphone and a camera connected to said information processing apparatus" as recited in claim 1.

Further, Atsushi fails to teach or suggest "analyzing a rate of change in hemoglobin concentration from said blood flow rate" as recited in claim 1.

Even further, Atsushi fails to teach or suggest "judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when said audio information includes predetermined audio information, whether a degree of concentration of said user to said learning program is higher than a predetermined degree by using said measurement information of said blood flow rate and said attention information to determine that the user is in concentration time" as recited in claim 1.

Yet even further, Atsushi fails to teach or suggest "recording said degree of concentration of the user and said attention information of the user with said progress of said learning program in said recording means" as recited in claim 1.

The above noted deficiencies of Atsushi are not supplied by any of the other references of record, namely Zaltman, whether taken individually or in combination with each other. Therefore, combining the teachings of Atsushi and Zaltman in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Zaltman teaches a metaphor elicitation technique with physiological function monitoring. However, there is no teaching or suggestion in Zaltman of the learning condition program or the system as recited in claim 1.

Zaltman discloses a process and apparatus for using a metaphor elicitation

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technique in conjunction with physiological function monitoring to elicit, organize and analyze data pertaining to a research topic. The metaphor elicitation technique process and apparatus is improved with the acquisition of data related to a user's physiological functioning. This data provides further insight and understanding, which can be used in creating an appropriate marketing campaign for a product, improving inter-office communications and determining the presence of pre-existing biases or beliefs.

One feature of the present invention, as recited in claim 1, includes acquiring input information and operation information given by the user to the information processing apparatus through the input means, where the input information and the operation information indicate progress of the learning program. Zaltman does not disclose this feature, and the Examiner does not rely upon Zaltman for teaching this feature.

Another feature of the present invention, as recited in claim 1, includes acquiring audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the information processing apparatus. Zaltman does not disclose this feature.

To support the assertion that Zaltman teaches this feature, the Examiner cites Fig. 1; column 6, lines 54-59; and column 7, lines 20-22. However, neither the cited text, nor any other portion of Zaltman, teaches or suggests the claimed feature. As described in column 7, lines 20-22, Zaltman teaches where the user's verbal comments are audio recorded digitally, in the computer control processor. There is

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no disclosure of obtaining attention information, as in the present invention.

Yet another feature of the present invention, as recited in claim 1, includes analyzing a rate of change in hemoglobin concentration from the blood flow rate. Zaltman does not disclose this feature, and the Examiner does not rely upon Zaltman for teaching this feature (see rejection of claim 3).

Still yet another feature of the present invention, as recited in claim 1, includes judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the learning program is higher than a predetermined degree by using the measurement information of the blood flow rate and the attention information to determine that the user is in concentration time. Zaltman does not disclose this feature.

To support the assertion that Zaltman teaches a step of judging a degree of concentration, the Examiner cites column 11, lines 41-58. However, neither the cited text, nor any other portion of Zaltman, teaches or suggests the claimed feature. The cited text describes where an increase in the processing within a brain region results in a proportional increase in the concentration of oxygen and other blood-borne metabolites accessible to that brain region. Thus, measuring the concentration of blood flow to the brain while an individual performs an isolated cognitive task provides a means of measuring the relative processing contribution of each subregion to the task. This is not the same as the present invention. There is no teaching or suggestion in Zaltman of where a determination is made as to whether a

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degree of concentration of the user to the learning program is higher than a predetermined degree by using the measurement information of the blood flow rate and the attention information to determine that the user is in concentration time, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, as in the present invention.

Yet even still another feature of the present invention, as recited in claim 1, includes recording the degree of concentration of the user and the attention information of the user with the progress of the learning program in the recording means. Zaltman does not disclose this feature. More specifically, Zaltman does not teach or suggest recording the degree of concentration of the user and the attention information of the user with the progress of the learning program in the recording means, as in the present invention.

Therefore, Zaltman fails to teach or suggest "acquiring input information and operation information given by said user to said information processing apparatus through said input means, wherein the input information and the operation information indicate progress of said learning program" as recited in claim 1.

Furthermore, Zaltman fails to teach or suggest "acquiring audio or video information of said user of said information processing apparatus so as to obtain attention information of said user through at least one of a microphone and a camera connected to said information processing apparatus" as recited in claim 1.

Further, Zaltman fails to teach or suggest "analyzing a rate of change in hemoglobin concentration from said blood flow rate" as recited in claim 1.

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Even further, Zaltman fails to teach or suggest "judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when said audio information includes predetermined audio information, whether a degree of concentration of said user to said learning program is higher than a predetermined degree by using said measurement information of said blood flow rate and said attention information to determine that the user is in concentration time" as recited in claim 1.

Yet even further, Zaltman fails to teach or suggest "recording said degree of concentration of the user and said attention information of the user with said progress of said learning program in said recording means" as recited in claim 1.

Both Atsushi and Zaltman suffer from the same deficiencies, relative to the features of the present invention, as recited in the claims. Therefore, combining the teachings of Atsushi and Zaltman in the manner suggested by the Examiner does not render obvious the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claim 1 (and claims 3, 7 and 9-14, which were not discussed by the Examiner) as being unpatentable over Atsushi in view of Zaltman are respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references used in the rejection of claim 1 (and claims 3, 7 and 9-14, which were not discussed by the Examiner).

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II. The Combination of Atsushi, Ho and Fumio Does Not Teach or Suggest the Features of Claims 3, 7 and 9-12

Claims 3, 7 and 9-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Publication No. 09-149894: *English Computer Translation from the Patent Abstracts of Japan* to Atsushi in view of U.S. Patent No. 5,944,530 to Ho et al. ("Ho"), and further in view of Japanese Publication No. 05-046066 (*English Computer Translation from the Patent of Abstracts of Japan*) to Fumio. This rejection is traversed for the following reasons. Applicants submit that the features of the present invention, as now more clearly recited in claims 1, 3, 7 and 9-14, are not taught or suggested by Atsushi, Ho or Fumio, whether taken individually or in combination with each other in the manner suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe features of the present invention. Specifically, amendments were made to the claims to more clearly recite that the present invention is directed to a learning condition judging program as recited, for example, in independent claim 3.

The present invention, as recited in claim 3, provides a learning condition judging program embodied on a computer readable medium, where the program is executable on a computer, and where the program operates on the computer to perform various steps. The computer acquires concurrently, through input means, information of contents executed in a connected terminal, information of a blood flow rate in a brain of a user of the terminal, and operation information

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and input information given by the user to the terminal. The computer also analyzes a rate of change in hemoglobin concentration from the blood flow rate. The computer further acquires audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the terminal. Furthermore, the computer judges a degree of concentration of the user to the information of contents using the analyzed rate of change in hemoglobin concentration at a corresponding time and the attention information. Further, the computer displays the degree of concentration of the user and the attention information of the user with corresponding time of the information of contents. The prior art does not teach or suggest all of these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record. Specifically, the features are not taught or suggested by either of Atsushi, Ho or Fumio, whether taken individually or in combination with each other.

As previously discussed, Atsushi teaches a living body input device and living body controller using an optical living body measurement method. However, there is no teaching or suggestion in Atsushi of the learning condition judging program executable in an information processing apparatus and a system for judging a learning condition, as recited in claim 3 of the present invention.

One feature of the present invention, as recited in claim 3, includes acquiring concurrently, through input means, information of contents executed in a

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connected terminal, information of a blood flow rate in a brain of a user of the terminal, and operation information and input information given by the user to the terminal. Atsushi does not disclose this feature.

To support the assertion that Atsushi teaches this feature, the Examiner cites the Abstract, and Figs. 1 and 6 and the associated text. However, neither the cited text nor drawings teach or suggest the claimed feature. For example, Atsushi does not teach acquiring information of a blood flow rate in a brain of a user of the terminal, in the manner claimed. In the present invention, the blood flow rate in a brain of the user of a terminal is measured. This is quite different from Atsushi. As described in the Abstract, Atsushi is directed to a device and method for controlling another device, such as a computer, a game, etc. by measuring localized brain functions of a user. The measured brain functions are then processed by an arithmetic unit and used to control the other device. As described in paragraph [0006], Atsushi discloses where the external device 23 may be a computer, a word processor, a game machine, or a communication device. Unlike in the present invention, Atsushi does not disclose where the user whose blood flow rate is being measure is the user of the terminal.

Another feature of the present invention, as recited in claim 3, includes analyzing a rate of change in hemoglobin concentration from the blood flow rate. Atsushi does not disclose this feature.

To support the assertion that Atsushi teaches this feature, the Examiner cites paragraph [0006]. However, neither the cited text nor any other portion of Atsushi teaches or suggests the claimed feature. As described in paragraph [0006] of

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Atsushi, the oxyhemoglobin concentration and reduction hemoglobin concentration are measured by the difference in a color by the absorption of light. This is not the same as analyzing a rate of change in hemoglobin concentration from the blood flow rate, as in the present invention.

Yet another feature of the present invention, as recited in claim 3, includes acquiring audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the terminal. Atsushi does not disclose this feature, and the Examiner does not rely upon Atsushi for teaching this feature.

Although the Examiner does not rely upon Atsushi for teaching this feature, Applicants submit that it would not be obvious to modify Atsushi with another reference to obtain this feature, because Atsushi teaches away from using conventional input means, such as a microphone or terminal connected to a terminal. As described in paragraph [0001], Atsushi is directed to the control of a device without the use of an input means, such as a keyboard or a mouse. An object of Atsushi is to control a device by using measured localized brain functions of a user, rather than using conventional input means. Therefore, Atsushi teaches away from using conventional input means, but rather uses electrodes attached to the head of a user (see, e.g., Drawings 1, 6 and 10). Accordingly, as conceded by the Examiner, Atsushi does not disclose acquiring audio or video information through at least one of a microphone and a camera connected to the information processing apparatus, as claimed. Applicants submit that because Atsushi

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teaches away from using conventional input means, Atsushi does not teach or suggest the claimed feature.

In response to Applicants' arguments that Atsushi teaches away from using conventional input means, the Examiner asserts Atsushi "is not being combined with the other prior art references for the purpose of input means. The Atsushi reference was for one reason combined to teach acquiring audio or video information." As best as can be determined, it appears that the Examiner's position is that because the Examiner relies upon the secondary references for teaching acquiring audio or video information rather than for teaching an input means, then Atsushi does not teach away from the claimed feature.

However, the Examiner has apparently misunderstood Applicants' argument. Audio and video information is acquired by use of conventional input means. The Examiner relies upon Ho, for instance, to teach the use of a digital camera as an input means. The fact that the Atsushi uses electrodes as input means, coupled with the expressly described object of Atsushi, which is to control a device by using measured localized brain functions of a user, rather than by using conventional input means (see paragraph [0001]), fully supports the assertion that Atsushi teaches away from the present invention. More specifically, one of ordinary skill in the art would not be motivated to combine the use of conventional input means with the teachings of Atsushi because Atsushi clearly teaches that conventional input means, such as the digital camera of Ho, are not to be used to acquire input and operation information. The purpose of Atsushi is to provide a means of obtaining information through a non-conventional manner (i.e., via electrodes), and to modify Atsushi in

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the manner asserted by the Examiner, to obtain information through conventional means, would be entirely against to its teachings. Therefore, there is no motivation to modify Atsushi with Ho in the manner suggested by the Examiner.

Still yet another feature of the present invention, as recited in claim 3, includes judging a degree of concentration of the user to the information of contents using the analyzed rate of change in hemoglobin concentration at a corresponding time and the attention information. Atsushi does not disclose this feature, and the Examiner does not rely upon Atsushi for teaching this feature.

Another feature of the present invention, as recited in claim 3, includes displaying the degree of concentration of the user and the attention information of the user with corresponding time of the information of contents. Atsushi does not disclose this feature, and the Examiner does not rely upon Atsushi for teaching this feature.

Therefore, Atsushi fails to teach or suggest "acquiring concurrently, through input means, information of contents executed in a connected terminal, information of a blood flow rate in a brain of a user of said terminal, and operation information and input information given by said user to said terminal" as recited in claim 3.

Furthermore, Atsushi fails to teach or suggest "analyzing a rate of change in hemoglobin concentration from said blood flow rate" as recited in claim 3.

Further, Atsushi fails to teach or suggest "acquiring audio or video information of said user of said information processing apparatus so as to obtain attention information of said user through at least one of a microphone and a camera connected to said terminal" as recited in claim 3.

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Even further, Atsushi fails to teach or suggest "judging a degree of concentration of said user to said information of contents using said analyzed rate of change in hemoglobin concentration at a corresponding time and said attention information" as recited in claim 3.

Still even further, Atsushi fails to teach or suggest "displaying said degree of concentration of the user and said attention information of the user with corresponding time of said information of contents" as recited in claim 3.

The above noted deficiencies of Atsushi are not supplied by any of the other references of record, namely Ho, whether taken individually or in combination with each other. Therefore, combining the teachings of Atsushi and Ho in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Ho teaches a learning method and system that considers a student's concentration level. However, there is no teaching or suggestion in Ho of the learning condition judging program executable in an information processing apparatus, as recited in claim 3 of the present invention.

Ho discloses a computer-aided-educational method and system that considers a student's concentration level when teaching the student. The system monitors automatically more than once the student's concentration-sensitive behavior while the student is working on the study materials. Through monitoring the student's volitional or involuntary behavior, the system provides an indication on the student's concentration level. Based on the indication, the system reacts accordingly. Reactions include, for example, providing rewards, punishments,

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and stimulation, or changing the study materials. The system can also react by asking the student a question to stimulate the student or to assess the student's level of understanding. Based on the student's response, the system may change to more appropriate study materials, or a more appropriate presentation style.

One feature of the present invention, as recited in claim 3, includes acquiring concurrently, through input means, information of contents executed in a connected terminal, information of a blood flow rate in a brain of a user of the terminal, and operation information and input information given by the user to the terminal. Ho does not disclose this feature. For example, Ho does not teach or suggest acquiring information of a blood flow rate in a brain of a user of the terminal, in the manner claimed, and the Examiner does not rely upon Ho for teaching this feature.

Another feature of the present invention, as recited in claim 3, includes analyzing a rate of change in hemoglobin concentration from the blood flow rate. Ho does not disclose this feature, and the Examiner does not rely upon Ho for teaching this feature.

Yet another feature of the present invention, as recited in claim 3, includes acquiring audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the terminal. Ho does not disclose this feature.

To support the assertion that Ho teaches this feature, the Examiner makes

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reference to the digital camera 180. However, this is not the same as the claimed feature. A digital camera produces a still image, which is not the same as either audio information or video (moving image) information.

Furthermore, as previously discussed, Atsushi teaches away from acquiring audio or video information of the user through conventional input means. Accordingly, it would not be obvious to modify Atsushi with Ho to obtain this feature. In response to Applicants' arguments that Atsushi teaches away from using conventional input means, the Examiner asserts Atsushi "is not being combined with the other prior art references for the purpose of input means. The Atsushi reference was for one reason combined to teach acquiring audio or video information." As best as can be determined, it appears that the Examiner's position is that because the Examiner relies upon the secondary references for teaching acquiring audio or video information rather than for teaching an input means, then Atsushi does not teach away from the claimed feature.

However, the Examiner has apparently misunderstood Applicants' argument. Audio and video information is acquired by use of conventional input means. The Examiner relies upon Ho, for instance, to teach the use of a digital camera as an input means. The fact that the Atsushi uses electrodes as input means, coupled with the expressly described object of Atsushi, which is to control a device by using measured localized brain functions of a user, rather than by using conventional input means (see paragraph [0001]), fully supports the assertion that Atsushi teaches away from the present invention. More specifically, one of ordinary skill in the art would not be motivated to combine the use of conventional input means with the

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teachings of Atsushi because Atsushi clearly teaches that conventional input means, such as the digital camera of Ho, are not to be used to acquire input and operation information. The purpose of Atsushi is to provide a means of obtaining information through a non-conventional manner (i.e., via electrodes), and to modify Atsushi in the manner asserted by the Examiner, to obtain information through conventional means, would be entirely against to its teachings. Therefore, there is no motivation to modify Atsushi with Ho in the manner suggested by the Examiner.

Still yet another feature of the present invention, as recited in claim 3, includes judging a degree of concentration of the user to the information of contents using the analyzed rate of change in hemoglobin concentration at a corresponding time and the attention information. Ho does not disclose this feature.

To support the assertion that Ho teaches this feature, the Examiner cites column 10, line 22 to column 11, line 8. However, neither the cited text nor any other portion of Ho teaches or suggests the claimed feature. Ho merely describes where an indication of the student's concentration can be printing a report indicating that the student's degree of concentration in the study materials is for a period of time. This is not the same as the present invention, where the user's degree of concentration on the information is determined, based on the analyzed rate of change in hemoglobin concentration at a corresponding time and attention information, as in the present invention.

Another feature of the present invention, as recited in claim 3, includes displaying the degree of concentration of the user and the attention information of the user with corresponding time of the information of contents. Ho does not

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disclose this feature, and the Examiner does not rely upon Ho for teaching this feature.

Therefore, Ho fails to teach or suggest "acquiring concurrently, through input means, information of contents executed in a connected terminal, information of a blood flow rate in a brain of a user of said terminal, and operation information and input information given by said user to said terminal" as recited in claim 3.

Furthermore, Ho fails to teach or suggest "analyzing a rate of change in hemoglobin concentration from said blood flow rate" as recited in claim 3.

Further, Ho fails to teach or suggest "acquiring audio or video information of said user of said information processing apparatus so as to obtain attention information of said user through at least one of a microphone and a camera connected to said terminal" as recited in claim 3.

Even further, Ho fails to teach or suggest "judging a degree of concentration of said user to said information of contents using said analyzed rate of change in hemoglobin concentration at a corresponding time and said attention information" as recited in claim 3.

Still even further, Ho fails to teach or suggest "displaying said degree of concentration of the user and said attention information of the user with corresponding time of said information of contents" as recited in claim 3.

The above noted deficiencies of Atsushi in view of Ho are not supplied by any of the other references of record, namely Fumio, whether taken individually or in combination with each other. Therefore, combining the teachings of Atsushi, Ho and Fumio in the manner suggested by the Examiner still fails to teach or suggest

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the features of the present invention as now more clearly recited in the claims.

Fumio teaches an education supporting device. However, there is no teaching or suggestion in Fumio of the learning condition judging program executable in an information processing apparatus, as recited in claim 3 of the present invention.

Objectives of Fumio are to enhance a learner's understanding, to advance learning contents, and to improve the learning efficiencies. To achieve these objectives, Fumio provides an education supporting device that supports the learning of a learner by reproducing an optical disk. On the optical disk, learning contents are recorded, at every chapter, distinctively by using indexes on a player. The player is equipped with an α -wave detector 15, which detects the α wave of the brain wave of the learner, a concentration degree discriminating part 16, which decides the degree of concentration by the α -wave detection of the α -wave detector 15, and an index detection part 17, which detects the index of the chapter of learning contents low in the degree of concentration, according to the decision result of the concentration decision part 16. In Fumio, the chapter is repeatedly reproduced according to the detected index of the chapter low in the degree of concentration.

One feature of the present invention, as recited in claim 3, includes acquiring concurrently, through input means, information of contents executed in a connected terminal, information of a blood flow rate in a brain of a user of the terminal, and operation information and input information given by the user to the terminal. Fumio does not disclose this feature, and the Examiner does not rely upon Fumio for teaching this feature.

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Another feature of the present invention, as recited in claim 3, includes analyzing a rate of change in hemoglobin concentration from the blood flow rate. Fumio does not disclose this feature, and the Examiner does not rely upon Fumio for teaching this feature.

Yet another feature of the present invention, as recited in claim 3, includes acquiring audio or video information of the user of the information processing apparatus so as to obtain attention information of the user through at least one of a microphone and a camera connected to the terminal. Fumio does not disclose this feature, and the Examiner does not rely upon Fumio for teaching this feature.

Still yet another feature of the present invention, as recited in claim 3, includes judging a degree of concentration of the user to the information of contents using the analyzed rate of change in hemoglobin concentration at a corresponding time and the attention information. Fumio does not disclose this feature, and the Examiner does not rely upon Fumio for teaching this feature.

Another feature of the present invention, as recited in claim 3, includes displaying the degree of concentration of the user and the attention information of the user with corresponding time of the information of contents. Fumio does not disclose this feature.

To support the assertion that Fumio teaches this feature, the Examiner makes reference to the image display device 13. However, it should be noted that as best as could be determined, the publication provided by the Examiner to Applicants does not make reference to an image display device 13. Nonetheless, Applicants submit that the display provided in Fumio does not

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perform the same step as in the present invention. Namely, the display in Fumio does not display the degree of concentration of the user and the attention information of the user with corresponding time of the information of contents, in the manner claimed.

Therefore, Fumio fails to teach or suggest "acquiring concurrently, through input means, information of contents executed in a connected terminal, information of a blood flow rate in a brain of a user of said terminal, and operation information and input information given by said user to said terminal" as recited in claim 3.

Furthermore, Fumio fails to teach or suggest "analyzing a rate of change in hemoglobin concentration from said blood flow rate" as recited in claim 3.

Further, Fumio fails to teach or suggest "acquiring audio or video information of said user of said information processing apparatus so as to obtain attention information of said user through at least one of a microphone and a camera connected to said terminal" as recited in claim 3.

Even further, Fumio fails to teach or suggest "judging a degree of concentration of said user to said information of contents using said analyzed rate of change in hemoglobin concentration at a corresponding time and said attention information" as recited in claim 3.

Still even further, Fumio fails to teach or suggest "displaying said degree of concentration of the user and said attention information of the user with corresponding time of said information of contents" as recited in claim 3.

Each of Atsushi, Ho and Fumio suffer from the same deficiencies, relative to the features of the present invention, as recited in the claims. Therefore, combining

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the teachings of Atsushi, Ho and Fumio in the manner suggested by the Examiner does not render obvious the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 3, 7 and 9-12 as being unpatentable over Atsushi in view of Ho, and further in view of Fumio are respectfully requested.

III. The Combination of Atsushi, Ho and Freer Does Not Teach or Suggest the Features of Claims 13-15

Claims 13-15 stand rejected under 35 C.F.R. §103(a) as being unpatentable over Atsushi, in view of Ho, and further in view of U. S. Patent No. 6,402,520 to Freer. This rejection is traversed for the following reasons.

Claims 14 and 15 are dependent on claim 1. Therefore, claims 14 and 15 are allowable for at least the same reasons previously discussed regarding independent claim 1.

Regarding the remaining claim 13, Applicants submit that the features of the present invention, as now more clearly recited in claims 13, are not taught or suggested by either of Atsushi, Ho or Freer, whether taken individually or in combination with each other in the manner suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe features of the present invention. Specifically, amendments were made to the claims to more clearly recite that the present invention is directed to a system as recited, for

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example, in independent claim 13.

The present invention, as recited in claim 13, provides a system. The system includes a near infrared measuring device, a terminal connected to the near infrared measuring device for measuring a blood flow rate in a brain of a user of the terminal, and a server connected to the terminal through a network. According to the present invention, the server includes a recording means for recording contents information, where the terminal includes a means for starting a learning program, displaying learning contents within a predetermined window on the display means, and continuously acquiring measurement information from the near infrared measuring device. The terminal also includes a display for displaying the contents information received from the server. The terminal further includes an input means for accepting input instructions and operation instructions for the displayed contents information, where the input instructions and operation instructions indicate progress of a user's learning of the contents information. Furthermore, the terminal includes a means for acquiring audio or video information of the user so as to obtain user's attention information. Also according to the present invention, the server further includes a storage for storing inputs from the input means, the measurement information from the near infrared measuring device, the acquired audio or video information as attention information of the user, and the displayed contents information at corresponding times in association with one another. Furthermore, the server includes a means for analyzing a rate of change in hemoglobin concentration from the blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio

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information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on the measurement information from the near infrared measuring device and the attention information to determine that the user is in concentration time. The server also includes a means for displaying to the display the degree of concentration of the user and the attention information of the user with corresponding time of the contents. The prior art does not teach or suggest all of these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record. Specifically, the features are not taught or suggested by either of Atsushi, Ho or Freer, whether taken individually or in combination with each other.

As previously discussed, Atsushi teaches a living body input device and living body controller using an optical living body measurement method. However, there is no teaching or suggestion in Atsushi of the system as recited in claim 13 of the present invention.

One feature of the present invention, as recited in claim 13, includes a terminal connected to the near infrared measuring device for measuring a blood flow rate in a brain of a user of the terminal. Atsushi does not disclose this feature.

To support the assertion that Atsushi teaches this feature, the Examiner refers to external device 23. However, external device 23 is not a terminal, as claimed. In the present invention, the blood flow rate in a brain of the user of a terminal is measured. This is quite different from Atsushi. As described in the

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Abstract, Atsushi is directed to a device and method for controlling another device, such as a computer, a game, etc. by measuring localized brain functions of a user. The measured brain functions are then processed by an arithmetic unit and used to control the other device. As described in paragraph [0006], Atsushi discloses where the external device 23 may be a computer, a word processor, a game machine, or a communication device. Unlike in the present invention, Atsushi does not disclose where the user whose blood flow rate is being measure is the user of the terminal.

Another feature of the present invention, as recited in claim 13, includes where the terminal includes means for starting a learning program, displaying learning contents within a predetermined window on the display means, and continuously acquiring measurement information from the near infrared measuring device. Atsushi does not disclose this feature.

The terminal device 23 in Atsushi is controlled by measuring localized brain functions of a user. A learning program is not embodied in the terminal device 23, and there is no disclosure of displaying learning contents within a predetermined window on a display means of the terminal device 23, as in the present invention.

Yet another feature of the present invention, as recited in claim 13, includes an input means for accepting input instructions and operation instructions for the displayed contents information, where the input instructions and operation instructions indicate progress of a user's learning of the contents information. Atsushi does not disclose this feature.

For example, Atsushi does not teach where the input instructions and the operation instructions indicate progress of the learning program. As described in

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paragraph [0006] of Atsushi, the oxyhemoglobin concentration change and reduction hemoglobin concentration change are measured independently. This information does not indicate the progress of the learning program, as in the present invention.

Still yet another feature of the present invention, as recited in claim 13, includes means for acquiring audio or video information of the user so as to obtain user's attention information. Atsushi does not disclose this feature, and the Examiner does not rely upon Atsushi for teaching this feature.

Another feature of the present invention, as recited in claim 13, includes means for analyzing a rate of change in hemoglobin concentration from the blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on the measurement information from the near infrared measuring device and the attention information to determine that the user is in concentration time. Atsushi does not disclose this feature.

For example, Atsushi does not teach or suggest means for analyzing a rate of change in hemoglobin concentration from the blood flow rate. As described in paragraph [0006] of Atsushi, the oxyhemoglobin concentration and reduction hemoglobin concentration are measured by the difference in a color by the absorption of light. This is not the same as analyzing a rate of change in hemoglobin concentration from the blood flow rate, as in the present invention.

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By way of further example, Atsushi does not teach or suggest judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on the measurement information from the near infrared measuring device and the attention information to determine that the user is in concentration time.

Therefore, Atsushi fails to teach or suggest "a terminal connected to said near infrared measuring device for measuring a blood flow rate in a brain of a user of said terminal" as recited in claim 13.

Furthermore, Atsushi fails to teach or suggest "wherein said terminal includes: means for starting a learning program, displaying learning contents within a predetermined window on said display means, and continuously acquiring measurement information from said near infrared measuring device" as recited in claim 13.

Further, Atsushi fails to teach or suggest "input means for accepting input instructions and operation instructions for said displayed contents information, wherein the input instructions and operation instructions indicate progress of a user's learning of the contents information" as recited in claim 13.

Even further, Atsushi fails to teach or suggest "means for acquiring audio or video information of said user so as to obtain user's attention information" as recited in claim 13.

Yet even further, Atsushi fails to teach or suggest "means for analyzing a rate

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of change in hemoglobin concentration from said blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when said audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on said measurement information from said near infrared measuring device and said attention information to determine that the user is in concentration time” as recited in claim 13.

The above noted deficiencies of Atsushi are not supplied by any of the other references of record, namely Ho, whether taken individually or in combination with each other. Therefore, combining the teachings of Atsushi and Ho in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

As previously discussed, Ho teaches a learning method and system that considers a student's concentration level. However, there is no teaching or suggestion in Ho of the system as recited in claim 13 of the present invention.

One feature of the present invention, as recited in claim 13, includes a terminal connected to the near infrared measuring device for measuring a blood flow rate in a brain of a user of the terminal. Ho does not disclose this feature, and the Examiner does not rely upon Ho for teaching this feature.

Another feature of the present invention, as recited in claim 13, includes where the terminal includes means for starting a learning program, displaying learning contents within a predetermined window on the display means, and continuously acquiring measurement information from the near infrared measuring

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device. Ho does not disclose this feature.

Yet another feature of the present invention, as recited in claim 13, includes input means for accepting input instructions and operation instructions for the displayed contents information, where the input instructions and operation instructions indicate progress of a user's learning of the contents information. Ho does not disclose this feature, and the Examiner does not rely upon Ho for teaching this feature.

Still yet another feature of the present invention, as recited in claim 13, includes means for acquiring audio or video information of the user so as to obtain user's attention information. Ho does not disclose this feature.

To support the assertion that Ho teaches this feature, the Examiner makes reference to the digital camera 180. However, this is not the same as the claimed feature. A digital camera produces a still image, which is not the same as either audio information or video (moving image) information.

Another feature of the present invention, as recited in claim 13, includes means for analyzing a rate of change in hemoglobin concentration from the blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on the measurement information from the near infrared measuring device and the attention information to determine that the user is in concentration time. Ho does not disclose this feature, and the Examiner does not rely upon Ho for teaching judging a degree

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of concentration, as previously presented.

Therefore, Ho fails to teach or suggest "a terminal connected to said near infrared measuring device for measuring a blood flow rate in a brain of a user of said terminal" as recited in claim 13.

Furthermore, Ho fails to teach or suggest "wherein said terminal includes: means for starting a learning program, displaying learning contents within a predetermined window on said display means, and continuously acquiring measurement information from said near infrared measuring device" as recited in claim 13.

Further, Ho fails to teach or suggest "input means for accepting input instructions and operation instructions for said displayed contents information, wherein the input instructions and operation instructions indicate progress of a user's learning of the contents information" as recited in claim 13.

Even further, Ho fails to teach or suggest "means for acquiring audio or video information of said user so as to obtain user's attention information" as recited in claim 13.

Yet even further, Ho fails to teach or suggest "means for analyzing a rate of change in hemoglobin concentration from said blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when said audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on said measurement information from said near infrared measuring device and said attention information"

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to determine that the user is in concentration time" as recited in claim 13.

The above noted deficiencies of Atsushi and Ho are not supplied by any of the other references of record, namely Freer, whether taken individually or in combination with each other. Therefore, combining the teachings of Atsushi, Ho and Freer in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Freer teaches an electroencephalograph based biofeedback system for improving learning skills. However, there is no teaching or suggestion in Freer of the system as recited in claim 13 of the present invention.

Freer discloses an apparatus using electrical activity of the brain to control a series of low-stimuli educational exercises displayed on a computer monitor to increase various educational components. The educational components include: time on-task, visual tracking, short-term memory, visual discriminatory processing, auditory discriminatory processing, and focus. The exercises are governed by real-time analysis of the focus and processing states of the user. Specific relative exercise performance data are collected and recorded from the use of each of the educational components to demonstrate improvement over time of the user in each of the sited educational components.

One feature of the present invention, as recited in claim 13, includes a terminal connected to the near infrared measuring device for measuring a blood flow rate in a brain of a user of the terminal. Freer does not disclose this feature, and the Examiner does not rely upon Freer for teaching this feature.

Another feature of the present invention, as recited in claim 13, includes

where the terminal includes means for starting a learning program, displaying learning contents within a predetermined window on the display means, and continuously acquiring measurement information from the near infrared measuring device. Freer does not disclose this feature, and the Examiner does not rely upon Freer for teaching this feature.

Yet another feature of the present invention, as recited in claim 13, includes input means for accepting input instructions and operation instructions for the displayed contents information, where the input instructions and operation instructions indicate progress of a user's learning of the contents information. Freer does not disclose this feature, and the Examiner does not rely upon Freer for teaching this feature.

Still yet another feature of the present invention, as recited in claim 13, includes means for acquiring audio or video information of the user so as to obtain user's attention information. Freer does not disclose this feature, and the Examiner does not rely upon Freer for teaching this feature.

Another feature of the present invention, as recited in claim 13, includes means for analyzing a rate of change in hemoglobin concentration from the blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is recognized, or when the audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on the measurement information from the near infrared measuring device and the attention information to determine that the user is in concentration time. Freer does not

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disclose this feature.

As described in column 6, lines 37-45, Freer teaches where brain wave activity of the user may be measured, and where beta waves activity may be used as a direct indication of the levels of attention (focus) and cognitive processing of a user. This is not the same as the present invention.

Therefore, Freer fails to teach or suggest "a terminal connected to said near infrared measuring device for measuring a blood flow rate in a brain of a user of said terminal" as recited in claim 13.

Furthermore, Freer fails to teach or suggest "wherein said terminal includes: means for starting a learning program, displaying learning contents within a predetermined window on said display means, and continuously acquiring measurement information from said near infrared measuring device" as recited in claim 13.

Further, Freer fails to teach or suggest "input means for accepting input instructions and operation instructions for said displayed contents information, wherein the input instructions and operation instructions indicate progress of a user's learning of the contents information" as recited in claim 13.

Even further, Freer fails to teach or suggest "means for acquiring audio or video information of said user so as to obtain user's attention information" as recited in claim 13.

Yet even further, Freer fails to teach or suggest "means for analyzing a rate of change in hemoglobin concentration from said blood flow rate and judging, when an event occurs within the predetermined window, when a facial image of the user is

recognized, or when said audio information includes predetermined audio information, whether a degree of concentration of the user to the contents information is higher than a predetermined degree, based on said measurement information from said near infrared measuring device and said attention information to determine that the user is in concentration time" as recited in claim 13.

Each of Atsushi, Ho and Freer suffer from the same deficiencies, relative to the features of the present invention, as recited in the claims. Therefore, combining the teachings of Atsushi, Ho and Freer in the manner suggested by the Examiner does not render obvious the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 15-17 as being unpatentable over Atsushi in view of Ho, and further in view of Freer, are respectfully requested.

IV. The Combination of Atsushi, Ho, Freer and Shpiro Does Not Teach or Suggest the Features of Claim 15

Claim 15 stands rejected under 35 C.F.R. §103(a) as being unpatentable over Atsushi in view of Ho, further in view of Freer, and even further in view of U. S. Patent Application Publication No. 2002/0150869 to Shpiro. Claim 15 is dependent on claim 1. Therefore, claim 15 is allowable for at least the same reasons previously discussed regarding independent claim 1.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the

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references used in the rejection of claims 1, 3, 7 and 9-14.

New Claims 16 and 17

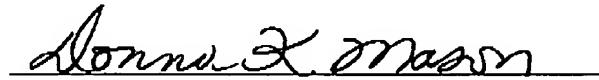
Claims 16 and 17 were added to more clearly describe features of the present invention. Claim 16 is dependent on claim 1, and claim 17 is dependent on claim 17. Accordingly, claims 16 and 17 are allowable for at least the same reasons previously discussed regarding their respective independent claims.

In view of the foregoing amendments and remarks, Applicants submit that claims 1, 3, 7 and 9-17 are in condition for allowance. Accordingly, early allowance of claims 1, 3, 7 and 9-17 is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger, Malur & Brundidge, P.C., Deposit Account No. 50-1417 (referencing Attorney Docket No. 500.42880X00).

Respectfully submitted,

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